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10/762,219	01/21/2004	David A. Cohen	IRO-003	2186

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GOODWIN PROCTER LLP
PATENT ADMINISTRATOR
EXCHANGE PLACE
BOSTON, MA 02109-2881

EXAMINER	
PIGGUSH, AARON C	
ART UNIT	**PAPER NUMBER**
2838	

DATE MAILED: 01/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/762,219	COHEN ET AL.	
	Examiner	Art Unit	
	Aaron Piggush	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,6,9,11-17 and 19-30* is/are rejected.

7)☒ Claim(s) *4, 7, 8, 10, and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 June 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *21 January 2004*, 10/20/04, 1/12/06 1/20/05
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it contains the title of the invention. The heading of the abstract should only recite one of the following: "Abstract" or "Abstract of the Disclosure." Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5, 6, 9, 11, 17, 19-21, 23-25, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Perdue (US 4,679,152).

With respect to claim 1, Perdue discloses a method for energy management in a robotic device, the robotic device comprising at least one energy storage unit (no. 207 in Fig. 12) and a signal detector (no. 42 in Fig. 3 and no. 90, 96, and 130 in Fig. 11), the method comprising the steps of:

providing a base station (no. 50 in Fig. 5) for mating with the robotic device, the base station comprising a plurality of signal emitters including a first signal emitter and a second signal emitter (no. 56A/C and B in Fig. 4 and 5 and col 4 ln 65 to col 5 ln 9);

determining a quantity of energy stored in the energy storage unit (no. 209 in Fig. 12 and col 5 ln 34-42) (applicant indicates at the top of page 28 of his specification that energy is monitored by simply measuring voltage or current, which is deemed met by measuring charge

state disclosed), the quantity characterized at least by a high energy level and a low energy level (col 10 ln 24-27); and

performing, by the robotic device, a predetermined task based at least in part on the quantity of energy stored (no. 80-140 in Fig. 11 and col 5 ln 34-66).

Furthermore, the quantity of energy stored is characterized by a high energy level and a low energy level because if the sensor circuit detects that the battery charge is low (no. 80 in Fig. 11), then the battery is implicitly characterized by a low energy level. Similarly, if the battery charge is not low, then the battery is implicitly characterized by a high energy level.

With respect to claim 2, coulometry is deemed met by Perdue by monitoring the charge state (col 5 ln 34-42), since a coulomb is a charge.

With respect to claim 3, Perdue discloses wherein the step of determining a quantity of energy stored comprises setting a time period (col 10 ln 43-56).

With respect to claim 5, Perdue discloses the step of returning the robotic device to the base station in response to reception, by the signal detector, of a base station homing signal (col 6 ln 23-29 and ln 60-68, col 8 ln 25-43, and no. 90-140 in Fig. 11).

With respect to claim 6, Perdue discloses wherein the step of returning the robotic device to the base station occurs when the quantity of the energy stored is less than the high energy level (no. 80-140 in Fig. 11 and col 5 ln 34-47 and ln 25-29).

With respect to claim 9, Perdue discloses the method further comprising the step of charging the robotic device (col 2 ln 13-16).

With respect to claim 11, Perdue discloses a method of docking a robotic device with a base station comprising a plurality of signal emitters including a first signal emitter and a second

signal emitter (no. 56A/C and B in Fig. 4 and 5 and col 4 ln 65 to col 5 ln 9), the method comprising the steps of:

orienting the robotic device in the relation to (i) a first signal transmitted by the first signal emitter and (ii) a second signal transmitted by the second signal emitter (col 2 ln 38-48); and

maintaining an orientation of the robotic device relative to the first and second signals as the robotic device approaches the base station (col 2 ln 45-54).

With respect to claim 17, Perdue discloses an autonomous system comprising a base station comprising:

charging terminals for contacting an external terminal of a robotic device (no. 51 in Fig. 5 and no. 52 and 54 in Fig. 4); and

a first signal emitter and a second signal emitter (no. 56A/C and B in Fig. 4 and 5 and col 2 ln 38-48).

With respect to claim 19, Perdue discloses wherein the second signal emitter transmits a base station homing signal (col 6 ln 23-29 and ln 60-68, col 8 ln 25-43, and no. 90-140 in Fig. 11).

With respect to claim 20, Perdue discloses wherein the homing signal comprises a pair of signals (no. 56 A and C in Fig. 4 and 5, col 2 ln 38-48, and col 6 ln 23-29).

With respect to claim 21, Perdue discloses wherein the pair of signals comprises a first signal and a second different signal (no. 56 A and C in Fig. 4 and 5, col 2 ln 38-48, and col 6 ln 23-29).

With respect to claim 23, Perdue discloses wherein the first signal emitter and the second signal emitter transmit at least one optical signal (col 6 ln 54-68 and col 2 ln 38-48).

With respect to claim 24, Perdue discloses the autonomous system further comprising a robotic device (no. 20 in Fig. 1 and abstract) for performing a predetermined task, the robotic device comprising:

at least one energy storage unit (no. 207 in Fig. 12) with external terminals for contacting the charging terminals (col 4 ln 56-64); and

at least one signal detector (no. 42 in Fig. 3 and col 2 ln 37-55).

With respect to claim 25, Perdue discloses wherein the at least one signal detector is adapted to detect at least one optical signal (col 2 ln 37-55).

With respect to claim 28, Perdue discloses a system for charging a mobile device (abstract), the system comprising:

a stationary charger comprising a plurality of first charging terminals (no. 51 in Fig. 5 and no. 52 and 54 in Fig. 4);

circuitry for detecting presence of the device by monitoring at least one of a predetermined change in and a predetermined magnitude of a parameter associated with the charger (col 8 ln 10-43 and no. 90-140 in Fig. 11); and

a mobile device comprising:

a battery (no. 207 in Fig. 12); and

a plurality of second charging terminals adapted to mate with first charging terminals (col 4 ln 56-64).

4. Claims 11-15, 17, and 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Colens (US 6,389,329).

With respect to claim 11, Colens discloses a method of docking a robotic device with a base station comprising a plurality of signal emitters including a first signal emitter and a second signal emitter (no. 2 and 3b,c in Fig. 3), the method comprising the steps of:

orienting the robotic device in the relation to (i) a first signal transmitted by the first signal emitter and (ii) a second signal transmitted by the second signal emitter (col 12 ln 23-39 and col 3 ln 22-40); and

maintaining an orientation of the robotic device relative to the first and second signals as the robotic device approaches the base station (col 12 ln 23-39 and Fig. 3).

With respect to claim 12, Colens discloses the method further comprising the steps of:

detecting, by the robotic device, an overlap between the first signal and the second signal (col 12 ln 23-39 and Fig. 3);

following, by the robotic device, a path defined at least in part at least by the signal overlap (col 12 ln 23-39 and 3a in Fig. 3); and

docking the robotic device with the base station (col 9 ln 1-5, Fig. 4, and abs ln 8-18).

With respect to claim 13, Colens discloses wherein the step of following the path defined at least in part by the signal overlap comprises reducing velocity of the robotic device (col 12 ln 13-17 and abstract).

Furthermore, with regard to claims 13 and 14, the description of the station as fixed shows that the robotic device must stop (i.e. reduce velocity) in order to connect to the station and have its battery recharged.

With respect to claim 14, Colens discloses wherein the step of docking the robotic device with the base station comprises:

detecting, by the robotic device, contact with charging terminals on the base station (col 2 ln 47-54, col 9 ln 1-5, and Fig. 4); and

stopping movement of the robotic device (col 12 ln 13-17 and abstract).

With respect to claim 15, Colens discloses the method further comprising the step of charging the robotic device (col 9 ln 1-5 and col 2 ln 17-20).

With respect to claim 17, Colens discloses an autonomous system comprising a base station comprising:

charging terminals for contacting an external terminal of a robotic device (no. 5 in Fig. 1 and 4); and

a first signal emitter and a second signal emitter (no. 2 and 3b,c in Fig. 3).

With respect to claim 19, Colens discloses wherein the second signal emitter transmits a base station homing signal (col 12 ln 23-39, col 3 ln 22-40, and col 8 ln 41-44).

With respect to claim 20, Colens discloses wherein the homing signal comprises a pair of signals (col 12 ln 23-39, col 3 ln 22-40, and Fig. 3).

With respect to claim 21, Colens discloses wherein the pair of signals comprises a first signal and a second different signal (col 12 ln 23-39, col 3 ln 22-40, and Fig. 3).

With respect to claim 22, Colens discloses wherein the first signal and the second signal overlap (col 12 ln 23-39 and 3a in Fig. 3).

5. Claims 26-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Broell (US 5,710,506).

With respect to claim 26, Broell discloses a method of charging a battery of a device, the method comprising the steps of:

providing low energy to charging terminals of a charger (col 7 ln 65 to col 8 ln 59 and "conditioning" state in Fig. 3-5);

detecting presences of the device by monitoring at least one of a predetermined change in and a predetermined magnitude of a parameters associated with charger (col 8 ln 29-59, no. 302 in Fig. 15, and col 20 ln 38-45); and

increasing energy to the charging terminals to charge the battery (col 8 ln 60 to col 9 ln 12, no. 328 in Fig. 15, and "bulk" state in Fig. 3-5).

With respect to claim 27, Broell discloses the method further comprising the steps of:

determining a level of charge in the device (Vsns in Fig. 1 and col 23 ln 56-58); and

permitting charging of the battery in the device when the level of charging is below a predetermined threshold (Vblk in Fig. 3-5, no. 304 to 330 in Fig. 15, col 9 ln 13-17, and col 10 ln 19-25).

With respect to claim 28, Broell discloses a system for charging a mobile device (col 1 ln 5-11), the system comprising:

a stationary charger comprising a plurality of first charging terminals (no. 12 and 14 in Fig. 1 and 10a);

circuitry for detecting presence of the device by monitoring at least one of a predetermined change in and a predetermined magnitude of a parameter associated with the charger (no. 40 in Fig. 1, no. 50 in Fig. 10a, col 8 ln 29-59, no. 302 in Fig. 15, and col 20 ln 38-45); and

a mobile device comprising:

a battery (no. 10 in Fig. 1 and 10a); and

a plurality of second charging terminals adapted to mate with first charging terminals (no. 12 and 14 in Fig. 1 and 10a).

With respect to claim 29, Broell discloses wherein the circuitry determines a level of charge in the a battery and controls a power level provided to the first charging terminals (no. 40 in Fig. 1, no. 50 in Fig. 10a, col 23 ln 56-58, col 24 ln 36-38, col 8 ln 29-65, and col 20 ln 38-55).

With respect to claim 30, Broell discloses wherein the circuitry increases the power level provided to the first charging terminals upon measuring a predetermined voltage across the first charging terminals when mated with the second charging terminal (col 8 ln 60 to col 9 ln 12, no. 328 in Fig. 15, and "bulk" state in Fig. 3-5).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Colens (US 6,389,329) in view of Broell (US 5,710,506).

With respect to claim 16, Colens does not expressly disclose wherein the step of charging the robotic device comprises a plurality of charging levels.

Broell discloses charging a device using a plurality of charging levels (abs ln 1-30, "conditioning" and "bulk" states in Fig. 3-5, and Fig. 15), in order to reach a full-charged level in less time without damaging the device by overcharging or by overheating.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a plurality of charging levels in the device of Colens, as did the device of Broell, so that damage to the device can be avoided due to overcharging or overheating of the battery, while still reaching a fully-charged level in a shorter amount of time.

Allowable Subject Matter

8. Claims 4, 7, 8, 10, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 4 recites wherein a predetermined task comprises movement of a robotic device away from a base station in response to reception of a base station avoidance signal when the amount of energy stored exceeds a high energy level.

Claim 7 recites wherein the robotic device is returned to the base station when the amount of energy stored is less than a low energy level and wherein the task comprises reducing the energy used by the robotic device.

Claim 8 depends upon claim 7.

Claim 10 recites resuming the predetermined task after the robotic device is charged.

Claim 18 recites wherein the first signal emitter transmits a base station avoidance signal.

The art of record does not disclose the above limitations, nor would it be obvious to modify the art in such a manner.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Piggush whose telephone number is 571-272-5978. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AP

KARL EASTHOM
SUPERVISORY PATENT EXAMINER